



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,559	08/24/2006	Mathias Lutz	LUTZ, M., ET AL-2 PCT	1580
25889	7590	10/28/2008		
COLLARD & ROE, P.C. 1077 NORTHERN BOULEVARD ROSLYN, NY 11576				
EXAMINER				
LOUDEN, CLIFFORD J				
ART UNIT		PAPER NUMBER		
3679				
MAIL DATE		DELIVERY MODE		
10/28/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/582,559

Applicant(s)

LUTZ ET AL.

Examiner

CLIFFORD J. LOUDEN

Art Unit

3679

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 June 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
- Paper No(s)/Mail Date 06/12/2006
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Information Disclosure Statement

1. The non-patent literature cited in the information disclosure statement filed on June 6, 2006 has not been considered as it is not provided with a date of publication. Note: the document merely recites a date of mailing. See 37 CFR 1.98(b)(5).

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Items 22 and 23 of Figure 3. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
4. The incorporation of essential material in the specification by reference (see the last sentence of pg. 15) to an unpublished U.S. application, foreign application or patent, or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference, if the material is relied upon to overcome any objection, rejection, or other requirement imposed by the Office. The amendment must be accompanied by a statement executed by the applicant, or a practitioner representing the applicant, stating that the material being inserted is the material previously incorporated by reference and that the amendment contains no new matter. 37 CFR 1.57(f).
5. The detailed description is objected to as failing to provide proper antecedent basis for the claimed subject matter (i.e. the "ring groove" of claim 6 and the "lid" of claim 8). See 37 CFR 1.75(d)(1) and MPEP § 608.01(o).

Claim Objections

6. Claim 1 is objected to as failing to comply with 37 CFR 1.75(i) because the plurality of elements are not separated by line indentation.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-8 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-3, 5, 7-8, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Welschof, US 6,171,196. Welschof shows a drive joint (11) for permitting a rotationally and axially fixed connection (drive joint 11 is an axially plunge-able VL-Verschiebegelenk Loebro constant velocity joint; Col. 3, L61-62), nevertheless allowing a limited angular movement (Abstract), between a first (36) and a second shaft sub-section (33) of a drive shaft (Col. 1, L62 - Col. 2, L2), such as a longitudinal shaft for motor vehicles (Col. 1, L62-64), which drive joint

has an inner hub (13) as an inner joint part and an outer hub (12) as an outer joint part, as well as torque transfer means (15) provided between them as additional joint parts, wherein the joint is structured in such a manner that when a certain axial force in the direction of one shaft sub-section towards the other shaft sub-section is exceeded, the joint parts disengage (Col. 2, L3-30).

Claim 2: Welschof shows a drive joint wherein the outer hub is configured as a deformation element (inherent, as any article will deform under sufficient loads).

Claim 3: Welschof shows a drive joint wherein the outer hub is configured in such a manner that if a predetermined axial force on the drive shaft is exceeded, it allows disengagement of the inner hub from the outer hub, with plastic and/or elastic deformation (Col. 4, L16-37).

Claim 5: Welschof shows a drive joint wherein the inner hub has an inner insertion gearing oriented coaxially to the axis of the inner hub, for accommodating an outer insertion gearing of one of the shaft sub-sections (Fig. 1).

Claim 7: Welschof shows a drive joint wherein the joint has a weld flange (34) for attachment to at least one of the shaft sub-sections on its drive-side and/or power-take-off- side end (Fig. 1).

Claim 8: Welschof shows a drive joint wherein the outer hub has a carrier housing (38) having an accommodation region for the outer hub assigned to it, and that a lid (42) is wedged in between the accommodation region for the outer hub (where item 38 curves around the radial circumference of item 12 as seen in Fig. 1) and the weld flange, on the inside of the carrier housing (Fig. 1).

As to claim 11: Welschhof shows a drive joint (11) for a motor vehicle (Abstract), which can be connected (Fig. 1) with a first shaft sub-section (36) and a second shaft sub-section (33), whereby the drive joint has an outer joint part (12) and an inner joint part (13) disposed axially within the former (Fig. 1), in which ball raceways are formed on the inside of the outer joint part (16) and on the outside of the inner joint part (17), and in which balls (15) are disposed in the ball raceways and spaced apart from one another by means of a ball cage (14), characterized in that wherein ridges that point radially inward are formed between the ball raceways of the outer joint part (inherent as the ridges are formed alongside the raceways), which are shaped and dimensioned in such a manner that the ball cage remains geometrically and mechanically intact, to a great extent, if an axial force that leads to the inner joint part and the outer joint part being pushed into one another is exceeded (Col. 4, L16-43).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 4, 6, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Welschhof, US 6,171,196 as applied to claims 1-3, 5, 7-8, and 11 above, and further in view of Jacob, US6,241,615. As to claim 4: Welschhof shows a drive joint wherein several raceways (16, 17) assigned to one another are provided in the inner hub and the outer hub (Fig. 1), in which balls are accommodated to transfer torque, and is configured in such a manner that the raceways

of the inner hub can be plastically and/or elastically deformed when the inner hub and the outer hub disengage, by means of the balls, at least at their drive-side end (Abstract). Welschof does not expressly disclose that a series of raceways of the inner hub runs at a slant to the axis of the inner hub.

Jacob teaches a series of raceways of the inner hub runs at a slant to the axis of the inner hub (17, 18; Fig. 1) so that the outer part pivots relative to the inner part at the same time as the cage pivots relative to the outer and inner parts around a common articulation center. At the time of the invention, it would have been obvious to one of ordinary skill in the art to replace the inner hub of Welschof with the inner hub as taught by Jacob to improve the drive joint so that the outer part pivots relative to the inner part at the same time as the cage pivots relative to the outer and inner parts around a common articulation center.

Claim 6: Jacob shows a drive joint wherein the inner hub has a ring groove (Fig. 1, to the far right of item 3) on its drive-side end, as an assembly aid.

Claim 10: Jacob shows a drive joint wherein at least the contour of the second inner running grooves, and/or the contour of the first cage centering surfaces of the outer hub, and/or the contour of the spherical outer surface of the cage, and/or the elasticity of the outer hub, are coordinated with one another in such a way that radial widening is made possible at least in the region of the second outer running grooves, by way of the balls of the second row that are displaced radially outward.

13. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jacob, US 6,241,615 in view of Krude et al., US 5,542,885. Jacob shows a drive joint that has a drive-side

end (11) and a power-take-off-side end (10), having an inner hub (3) that has an inner hub axis (7) and an outer contour (Fig. 1), in which first inner running grooves (18) and second inner running grooves (17) are disposed, distributed alternately about the inner hub axis (Fig. 1), whereby the first inner running grooves run proceeding from the drive-side end in the direction of the power-take-off-side end, and their groove root moves away from the inner hub axis as this happens (Col. 5, L28-33), and whereby the second inner running grooves run proceeding from the power-take-off-side end in the direction of the drive-side end, and their groove root moves away from the inner hub axis as this happens (Col. 5, L33-39), an outer hub (1) that has an outer hub axis (6) and an inner contour (Fig. 1), in which first outer running grooves (15) and second outer running grooves (14) are disposed, distributed alternately about the outer hub axis (Fig. 1), and the first inner running grooves lie opposite first outer running grooves (Fig. 1), and the second inner running grooves lie opposite second outer running grooves (Fig. 1), in each instance, and form a pair with them, in each instance, whereby the first outer running grooves run proceeding from the drive-side end in the direction of the power-take-off-side end, and their groove root approaches the outer hub axis as this happens (Col. 4, L65 - Col. 5, L3), and whereby the second outer running grooves run proceeding from the power-take-off-side end in the direction of the drive-side end, and their groove root approaches the outer hub axis as this happens (Col. 4, L60-65), a ring-shaped cage (4) having a spherical outer surface, which is disposed between the inner hub and the outer hub (Fig. 1), and has radial windows (25), in accordance with the number of running groove pairs, in which balls that engage in the running grooves are guided (Col. 5, L51-64), and whereby the cage is guided to be centered in the outer hub (Fig. 1),

Jacob does not expressly disclose wherein: first introduction contours provided in the inner surface of the outer hub, which are disposed on both sides of the first outer running grooves and make a transition, from the drive-side end, at a diameter that at least approximately corresponds to the outside diameter of the cage, at least approximately after half the axial length of the outer hub, into first cage centering surfaces that run at an incline in the direction of the cage axis, and are configured to be ball-shaped, in accordance with the spherically shaped contact surfaces of the cage; or second introduction contours provided in the inner surface of the outer hub, which are disposed on both sides of the second outer running grooves and make a transition, from the power-take-off-side end, at a diameter that at least approximately corresponds to the outside diameter of the cage, at least approximately after half the axial length of the outer hub, into second cage centering surfaces that run at an incline in the direction of the cage axis, and are configured to be ball-shaped, in accordance with the spherically shaped contact surfaces of the cage, whereby centering of the cage takes place exclusively in the outer hub, and centering of the inner hub relative to the outer hub takes place exclusively by way of the balls.

Krude et al. teaches introduction contours (designated as an "annular gap" and shown in Fig. 2a in the general region of item 9a) provided in the inner surface of the outer hub (1a), which are disposed on both sides of the outer running grooves and make a transition, from the drive-side end, at a diameter that at least approximately corresponds to the outside diameter of the cage, at least approximately after half the axial length of the outer hub, into first cage centering surfaces that run at an incline in the direction of the cage axis, and are configured to be ball-shaped, in accordance with the spherically shaped contact surfaces of the cage as all may be

readily gathered in Fig. 2a for the purpose of avoiding the usually complicated operation of introducing the cage into the outer joint part (Col. 2, L25-48). As a result of the close matching contours of the inner surface of the outer hub to the outer surface of the ball cage, the centering of the cage takes place exclusively in the outer hub, and centering of the inner hub relative to the outer hub takes place exclusively by way of the balls (see Figs. 2-2a).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the cage of Jacob with the introduction contours as taught by Krude et al. to improve the device in order to avoid the usually complicated operation of introducing the cage into the outer joint part while simultaneously providing for the centering of the cage exclusively via the outer hub due to the close matching contours of the inner surface of the outer hub to the outer surface of the ball cage.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Jacob et al., US 2003/0171152, discloses a homocinetic joint. Jacob, US 6,270, 419, discloses a constant velocity fixed joint with two sets of running grooves extending in opposite directions. Cermak et al., US 6,379,255, discloses a drive assembly having a propeller and an intermediate bearing.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLIFFORD J. LOUDEN whose telephone number is (571)270-5504. The examiner can normally be reached on Monday through Thursday, 8:00AM to 4:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel P. Stodola can be reached on (571)272-7087. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Greg Binda/
Primary Examiner, Art Unit 3679

/CLIFFORD J LOUDEN/
Examiner, Art Unit 3679
October 24, 2008